REMARKS

Claims 1 and 21 are pending in the application.

Claim 1 and 21 are currently amended and claims 3, 4, 8, 10, 11, 15, 17, 23, and 24 are newly cancelled. Applicants respectfully submit that no new matter is added to currently amended claims 1 and 21.

Applicants respectfully submit that entry of the currently amended claims is proper because the currently amended claims will either place the application in condition for allowance or in better form for appeal.

Claims 1, 3-4, 8, 10-11, 15, 17, 21, and 23-24 stand rejected under 35 U.S.C. §103(a) as unpatentable over "Maintenance of Cube Automatic Summary Tables" by Lehner et al., hereinafter, Lehner, in view of U.S. Patent No. 6,484,159 to Mumick et al., hereinafter, Mumick.

Applicants respectfully traverse the rejection based on the following discussion.

I. The 35 U.S.C. 103(a) Rejection as Unpatentable over Lehner and Mumick

A. The Lehner Disclosure

Lehner discloses that for the step of Aggregate Value Compensation, when a delta group has a corresponding group in the AST, then the new value for the group must be computed based on the value of the delta and the current value of the group. Since the AVG aggregation function can be mapped to an equivalent SUM/COUNT expression, '+' is the only aggregation value compensation function, required to support SUM, COUNT, and AVG. (Page 513, Step IV: Aggregate Value Compensation, first paragraph).

Lehner also discloses that although the incremental maintenance strategy provides an automatic synchronization for ASTs when the underlying base tables change, there are scenarios where 'DEFERRED' refresh is justified. (Page 513, 4. FULL REFRESH, lines 1-4).

B. The Mumick Disclosure

Mumick discloses how change-table techniques can be used to derive efficient and simple algebraic expressions for maintenance of view expressions involving outerjoin operators.

Outerjoin is supported in SQL. Further, outerjoins have recently gained importance because data from multiple distributed databases can be integrated by means of outerjoin views. (col. 17, lines 29-31, which is cited by the Office Action).

C. Arguments

Currently amended, independent claims 1 and 21 recite in relevant part,

"upon receiving a query corresponding to said AST, populating and either inserting or deleting said variables and said error estimate variables within said second work area to provide an incrementally maintained variable and an incrementally maintained error estimate variable to said first work area;

if a ratio of an estimated error value of said algebraic aggregate function for a given row of said AST to said incrementally maintained error estimate value, corresponding to said given row, exceeds a threshold, then selectively recomputing a value for said variable, otherwise maintaining said incrementally maintained error estimate value of said variable".

Lehner merely discloses that the algebraic aggregation function, AVG, can be mapped to an equivalent SUM/COUNT expression, with '+' as the only aggregation value compensation function, required to support SUM, COUNT, and AVG.

Nowhere does Lehner disclose, teach or suggest at least the present invention's features of determining if a ratio of an estimated error value of the algebraic aggregate function for a given row of the AST to the incrementally maintained error estimate value, corresponding to the given row, exceeds a threshold, and then selectively recomputing a value for the variable if the ratio is exceed, otherwise maintaining the incrementally maintained error estimate value. Thus, the present invention efficiently only recomputes the variable when error estimates of its value from the algebraic aggregate function exceed a predetermined ratio, when compared to the incrementally maintained error estimate value.

Instead, Lehner merely discloses that the algebraic aggregation function, AVG, can be mapped to an equivalent SUM/COUNT expression, with '+' as the only aggregation value compensation function, required to support SUM, COUNT, and AVG.

Mumick merely discloses that outerjoins for maintenance of views may comprise multiple algebraic expressions.

Mumick does not cure the deficiencies of Lehner above.

Likewise, nowhere does Mumick disclose, teach or suggest at least the present invention's features of determining if a ratio of an estimated error value of the algebraic aggregate function for a given row of the AST to the incrementally maintained error estimate value, corresponding to the given row, exceeds a threshold, and then selectively recomputing a value for the variable if the ratio is exceed, otherwise maintaining the incrementally maintained error estimate value. Thus, the present invention efficiently only recomputes the variable when error estimates of its value from the algebraic aggregate function exceed a predetermined ratio, when compared to the incrementally maintained error estimate value.

Instead, Mumick merely discloses that outerjoins for maintenance of views may comprise multiple algebraic expressions.

For at least the reasons outlined above, Applicants respectfully submit that Lehner and Mumick, either individually or in combination, do not disclose, teach, or suggest at least the present invention's features of: "upon receiving a query corresponding to said AST, populating and either inserting or deleting said variables and said error estimate variables within said second work area to provide an incrementally maintained variable and an incrementally maintained error estimate variable to said first work area; if a ratio of an estimated error value of said algebraic aggregate function for a given row of said AST to said incrementally maintained error estimate value, corresponding to said given row, exceeds a threshold, then selectively recomputing a value for said variable, otherwise maintaining said incrementally maintained error estimate value of said variable", as recited in currently amended, independent claim 1 and 21. Accordingly, Lehner and Mumick, either individually or in combination, fail to render obvious the subject matter of currently amended, independent claims 1 and 21 under 35 U.S.C. §103(a). The rejection of cancelled claims 3, 4, 8, 10, 11, 15, 17, 23, and 24 is moot. Withdrawal of the

rejection of claims 1, 3, 4, 8, 10, 11, 15, 17, 21, 23, and 24 under 35 U.S.C. §103(a) as unpatentable over Lehner and Mumick is respectfully solicited.

II. Formal Matters and Conclusion

Claims 1 and 21 are pending in the application.

Applicant respectfully submits that entry of currently amended claims is proper because the currently amended claims will either place the application in condition for allowance or in better form for appeal.

With respect to the rejection of the claims over the prior art, Applicants respectfully submit that the currently amended claims are distinguishable over the cited prior art of record. In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw the rejections to the claims.

In view of the foregoing, Applicants submit that claims 1 and 21, all the claims presently pending in the application, are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest time possible.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary.

Please charge any deficiencies and credit any overpayments to Attorney's Deposit Account Number 09-0441.

Respectfully submitted,

Dated: July 14, 2008

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